REMARKS

Favorable reconsideration and allowance of the subject application are respectfully requested. Claims 1-2 and 4-41 are pending in the present application, with claims 1, 7, 22, 38, and 40 being independent. Claim 3 has been deleted without prejudice or disclaimer to the subject matter contained therein. Claims 38-41 have been added by this amendment.

Claim Rejection under 35 U.S.C. §112

The Examiner rejected claims 8-11 and 22-37 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. This rejection is respectfully traversed.

Each of the informalities identified in the Office Action have been addressed by this amendment. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection. Furthermore, because the Examiner did not reject claims 8-9 and 28-29 in view of any prior art, and because the amendments made to those claims should overcome the 35 U.S.C. §112 rejection, Applicants respectfully request that the Examiner indicate that claims 8-9 and 28-29 are allowable.

Claim Rejections under 35 U.S.C. 102

The Examiner rejected claims 1-7, 10-16, 19, 20, 22-27, and 30-35 under 35 U.S.C. 102(e) as being anticipated by *Zheng* et al. (US 6,184,816). This rejection is respectfully traversed insofar as it pertains to the presently pending claims.

Zheng et al. is directed to an apparatus and method for determining wind profiles and for predicting clear air turbulence. *Zheng* et al. includes a data link to provide large-scale weather information from ground stations and environmental data from other airplanes, see col. 6, lines 15-16. Data from ground and airborne radar is used to simulate weather development. The data may also be data linked from satellites, other aircraft, or ground stations, see col. 7, lines 4-7. The uplinked data transmitted to the aircraft contains information on possible vortex characteristics and/or weather phenomenon, this information is then combined or utilized to develop a real time airborne model of where these hazardous phenomenon are likely to be encountered, see col. 7, lines 24-34.

Applicants respectfully submit that *Zheng* et al. fails to teach or suggest at least the combination of elements including: (1) a base station that includes a memory for storing data sets constituted of all observation data obtained in the past through observation by a meteorological observation means, records of

courses of action taken by the flying object on the basis of the observation data, and records of events encountered by the flying object as a result of the records of the courses of action, as recited in independent claim 1; (2) a base station that transmits a signal for operating a flying object to control the operation of the flying object, as recited in independent claim 7; or (3) information that is provided as common information for navigation of the flying objects is stored in each of the flying objects, and a course of action to be taken by each of the flying objects is determined on the basis of the information and observation data from the meteorological observation means, as recited in independent claim 22.

Independent Claim 1

Regarding independent claim 1, which now incorporates the limitations of canceled claim 3, the Examiner alleges that *Zheng* et al. teaches a data set comprising: (1) all observation data obtained in the past through observation by the meteorological observation means; (2) records of courses of action taken by the flying object on the basis of the observation data; and (3) records of events encountered by the flying objects as a result of the records of the courses of action and cites Col. 9, line 49 through Col. 10; Col. 16, lines 30+, of *Zheng* et al, for support thereof.

Applicants respectfully submit, however, that *Zheng* et al. fails to teach or suggest the above described data sets. Referring to the cited section of *Zheng* et al. it is taught that "[a]n on-board computer...executes software that implements the...CAT nowcast," and that "[o]n board storage 3 is used to store pre-loaded coarse simulation data, terrain database information, and program code," see col. 9, lines 50-56. This pre-loaded coarse simulation data, terrain database information, and program code of *Zheng* et al. is not synonymous with the contents of the data sets as recited in independent claim 1; and as described herein above.

Therefore, one skilled in the art would not look to *Zheng* et al. in order to create data sets containing the above describe features. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection.

Independent Claim 7

Regarding independent claim 7, the Examiner alleges in the outstanding Office Action that the subject matter of claim 7 is taught by *Zheng* et al., and cites col. 16 lines 30+, for support thereof. Applicants respectfully submit that *Zheng* et al. fails to teach or suggest at least that a base station transmits a signal for operating the flying object, in order to control the operation of the flying object. Referring to the cited section of *Zheng* et

al., there is absolutely no mention that a signal, transmitted from a base station, controls the operation of the flying object. In fact, col. 16, lines 30+, with reference to figures 4a-4d teach: data collection via up/down-link for aircraft using existing equipment (fig. 4a); a retrofit installation that includes a ground proximity warning system (fig. 4b); and examples of weather polygons (figs. 4c and 4d).

Therefore, because *Zheng* et al. fails to teach or suggest that a base station transmits a signal for operating the flying object, in order to control the operation of the flying object, as recited in independent claim 7, Applicants respectfully request that the Examiner withdraw the rejection.

Independent Claim 22

Regarding independent claim 22, and as stated above, *Zheng* et al. fails to teach or suggest that information, provided as common information for navigation of the flying objects, is stored in each of the flying objects, and a course of action to be taken by each of the flying objects is determined on the basis of the information and observation data from the meteorological observation means.

The Examiner, however, alleges that figure 4A and col. 16, lines 30+ of *Zheng* et al. teaches the features recited in independent claim 7. Referring to fig. 4A, and the cited section

of *Zheng* et al. it is taught that a base station 60 is disposed on the ground. In other words, in *Zheng* et al., all of the base stations are disposed on the ground, being clearly shown as "Ground station." On the other hand, according to independent claim 22, a ground based base station is not required. Independent claim 22 recites that the navigation system communicates information and observation data between flying objects, whereby a course of action is therewith determined. As such, one skilled in the art can appreciate that the time required for deciding an action for the flying object, by communicating directly with another flying object, is shorter than that in the case of communicating information via a base station. This feature is particularly important and advantageous for high-speed objects such as flying objects.

Accordingly, because *Zheng* et al. fails to teach at least all of the limitations of independent claim 22, Applicants respectfully request that the Examiner withdraw the rejection.

Furthermore, because claims 2-6, 10-16, 19, 20, 23-27, and 30-35 are dependent claims, Applicants respectfully request that the Examiner withdraw the rejection because claims 2-6, 10-16, 19, 20, 23-27, and 30-35 should be considered allowable at least for depending from an allowable base claim.

Claim Rejections under 35 U.S.C. §103

The Examiner rejected: claims 17-18 under 35 U.S.C. §103(a) as being unpatentable over *Zheng* et al. in view of *Small* et al. (US 5, 093,563); and claims 21, 36, 37 under 35 U.S.C. §103(a) as being unpatentable over *Zheng* et al. in view of *De Groot* et al. (US 6,327,039). These rejections are respectfully traversed.

Claims 17, 18, 21, 36, and 37 are dependent claims, which Applicants respectfully submit define over the prior art at least for depending from an allowable base claim. Accordingly, withdrawal of the rejection is respectfully requested.

Lastly, added claims 38-41 should be considered allowable, at least because the combination of elements as recited in the added claims is not anticipated nor obvious in view of the cited prior art.

Conclusion

In view of the above amendments and remarks, this application appears to be in condition for allowance and the Examiner is, therefore, requested to reexamine the application and pass the claims to issue.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicants hereby petition for an extension of time for three (3) months to December 25, 2002, for filing a reply to the Office Action dated June 25,

2002, in connection with the above-identified application.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at telephone number (703) 205-8000, which is located in the Washington, DC area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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By _____

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Attachment: Version with Markings to Show Changes Made

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claim 3 has been cancelled without prejudice or disclaimer.

The claims have been amended as follows:

1. (ONCE AMENDED) A flying object navigation[,] system comprising:

a base station capable of storing information provided as common information for navigation of at least one flying object existing as a navigation object, said base station transmitting to said flying object necessary data from said stored information for determining a course of action to be taken by said flying object, on the basis of observation data from meteorological observation means for observing the meteorology of a space region in which said flying object is flying, said base station transmitting said necessary data by using communication means connected to said flying object,

wherein said base station has a memory for storing data sets comprising:

all observation data obtained in the past through observation by said meteorological observation means;

records of courses of action taken by said flying object on

the basis of the observation data; and

records of events encountered by said flying object as a result of the records of the courses of action.

2. (Once Amended) The [A] flying object navigation system according to claim 1, [further comprising] wherein

[a] said flying object, having said meteorological observation means, further includes:

transmitting means for transmitting, to said base station, observation data obtained through observation by said meteorological observation means[,]; and

receiving means for receiving necessary data for determining a course of action to be taken, the necessary data being transmitted from said base station by using said communication means.

3. CANCELLED

4. (Once Amended) The [A] flying object navigation system according to claim 1 [3], wherein said base station [has] inlcudes a data base which is constructed on the basis of the contents of said data sets stored [on] in said memory[,] and [in which] wherein observation data obtained through observation by said

meteorological observation means, a course of action taken by said flying object after meteorological observation, and an event encountered by said flying object as a result of taking the course of action are related to each other.

5. (Once Amended) The [A] flying object navigation system according to claim 4, wherein said base station [has] comprises:

a receiving section for receiving, through said communication means, observation data obtained through observation by said meteorological observation means;

a prediction section for predicting the relationship between a course of action taken by said flying object and an event encountered by said flying object as a result of taking the course of action by making a search to ascertain which case in said data base the received observation data corresponds to; and

a transmitting section for transmitting a prediction result obtained by said prediction section to said flying object through said communication means.

6. (Once Amended) The [A] flying object navigation system according to claim 5, wherein said base station has a function of successively storing, when data sets are newly formed, the new data sets on said memory, and a function of reconstructing said data

base from the older data sets and the new data sets successively stored.

7. (Once Amended) A flying object navigation system [according to claim 5,] comprising:

a base station capable of storing information provided as common information for navigation of at least one flying object existing as a navigation object, said base station transmitting to said flying object necessary data from said information for determining a course of action to be taken by said flying object, on the basis of observation data from meteorological observation means for observing the meteorology of a space region in which said flying object is flying, said base station transmitting said necessary data by using communication means connected to said flying object, and

wherein said base station transmits a signal for operating said flying object to control the operation of said flying object.

8. (Once Amended) [A] The flying object navigation system [comprising a flying object navigation system] according to claim 1, wherein said system is provided on each of a plurality of different stars, and said base station[s] that is respectively provided on the stars are connected by base station interconnection

communication means.

9. (Once Amended) [A] The flying object navigation system [comprising a flying object navigation system] according to claim 1, wherein said system is provided on each of a plurality of different stars, a central base station is provided among the plurality of stars, and said base station[s] that is respectively provided on the stars are connected to each other through said central base station.

10. (Once Amended) [A] The flying object navigation system according to claim 1, wherein a plurality of [said] base stations are provided on one star.

11. (Once Amended) [A] The flying object navigation system according to c communication means, and [that,] wherein every time [said] a data base is reconstructed, [the] data sets and the data base are transmitted between said base stations.

12. (Once Amended) The [A] flying object navigation system according to claim 1, wherein [each of] said base station and said flying object has an antenna, and each of said communication means

and said base station interconnection communication means performs wireless communication.

13. (Once Amended) The [A] flying object navigation system according to claim 1, wherein said flying object is an airplane.

14. (Once Amended) The [A] flying object navigation system according to claim 1, wherein said meteorological observation means comprises an air turbulence observation apparatus.

15. (Once Amended) The [A] flying object navigation system according to claim 1, wherein an event encountered by said flying object includes changes in wind velocity with time in vertical and/or horizontal directions acting on said flying object.

16. (Once Amended) The [A] flying object navigation system according to claim 12, wherein said communication means for performing wireless communication uses light waves.

17. (Once Amended) The [A] flying object navigation system according to claim 12, wherein a plurality of [said] base stations are provided on one star and are connected by a base station interconnection cable.

18. (Once Amended) The [A] flying object navigation system according to claim 17, wherein said base station interconnection cable is formed of an optical fiber cable.

19. (Once Amended) The [A] flying object navigation system according to claim 14, wherein said air turbulence detector comprises a laser radar air turbulence detector.

20. (Once Amended) The [A] flying object navigation system according to claim 19, wherein said laser radar air turbulence detector has functions of transmitting laser light, receiving, as a received signal, scattered light caused by scattering of the laser light in the air, and observing the wind velocity from the Doppler effect in the received signal.

21. (Once Amended) The [A] flying object navigation system according to claim 19, [characterized in that] wherein said laser radar air turbulence detector has functions of transmitting laser light, receiving, as a received signal, scattered light caused by scattering of the laserlight in the air, and observing the density of air from the intensity of the received signal.

22. (Once Amended) A flying object navigation system comprising:

at least one flying object existing as a navigation object;

meteorological observation means for observing the meteorology of a space region in which said flying object is flying; and

flying object interconnection means for interconnecting a plurality of said flying objects,

[characterized in that] wherein information provided as common informatic objects is determined on the basis of said information and observation data from said meteorological observation means.

23. (Once Amended) The [A] flying object navigation system according to claim 22, [characterized in that] wherein said meteorological observation means is mounted on said flying object.

24. (Once Amended) The [A] flying object navigation system according to claim 23, [characterized in that] wherein said flying object has a memory for storing:

data sets constituted of all observation data obtained in the past through observation by said meteorological observation means mounted on said at least one flying object[,];

records of courses of action taken by said flying object on the basis of the observation data[,]; and

records of events encountered by said flying object as a

result of the records of the courses of action.

25. (Once Amended) The [A] flying object navigation system according to claim 24, [characterized in that] wherein said flying object [has] further comprises:

a data base which is constructed on the basis of the contents of said data sets stored on said memory, and [in which] wherein observation data obtained through observation by said meteorological observation means, a course of action taken by said flying object after meteorological observation, and an event encountered by said flying object as a result of taking the course of action are related to each other.

26. (Once Amended) The [A] flying object navigation system according to claim 25, [characterized in that] wherein said flying object [has] further comprises:

a prediction section for predicting the relationship between a course of action taken by said flying object and an event encountered by said flying object as a result of taking the course of action by making a search to ascertain which case in said data base the received observation data obtained through observation by said meteorological observation means corresponds to; and

a transmitting section for transmitting a prediction result

obtained by said prediction section to another flying object through said flying object interconnection communication means.

27. (Once Amended) The [A] flying object navigation system according to claim 26, [characterized in that] wherein said flying object [has] includes a function of successively storing on said memory data sets, each of said memory data sets comprising: [constituted of]

observation data obtained through observation by said meteorological observation means mounted on said flying object or another flying object[,];

a record of a course of action taken by said flying object or the other flying object on the basis of the observation data[,]; [and]

an event actually encountered by said flying object or the other flying object as a result of the record of the course of action[,]; and

a function of reconstructing said data base from updated data sets obtained by combining the older data sets and the new data sets successively stored.

28. (Once Amended) The [A] flying object navigation system according to claim 22, [characterized in that] wherein said system

is provided on each of a plurality of different stars, and said flying objects, flying respectively near the stars, are connected by said flying object interconnection communication means.

29. (Once Amended) The [A] flying object navigation system according to claim 22, [characterized in that] wherein said system is provided on each of a plurality of different stars, wherein a central base station is provided among the plurality of stars, and wherein said flying objects flying respectively near the stars are connected to each other through said central base station.

30. (Once Amended) The [A] flying object navigation system according to claim 22, [characterized in that] wherein said flying object has an antenna, and said flying object interconnection communication means performs wireless communication.

31. (Once Amended) The [A] flying object navigation system according to claim 22, [characterized in that] wherein said flying object is an airplane.

32. (Once Amended) The [A] flying object navigation system according to claim 22, [characterized in that] wherein said meteorological observation means comprises an air turbulence

observation apparatus.

33. (Once Amended) The [A] flying object navigation system according to claim 32, [characterized in that] wherein an event encountered by said flying object includes changes in wind velocity with time in vertical and horizontal directions acting on said flying object.

34. (Once Amended) The [A] flying object navigation system according to claim 32, [characterized in that] wherein said flying object interconnection communication means for performing wireless communication uses light waves.

35. (Once Amended) The [A] flying object navigation system according to claim 32, [characterized in that] wherein said air turbulence detector comprises a laser radar air turbulence detector.

36. (Once Amended) The [A] flying object navigation system according to claim 35, [characterized in that] wherein said laser radar air turbulence detector has functions of transmitting laser light, receiving, as a received signal, scattered light caused by scattering of the laser light in the air, and observing the wind

velocity from the Doppler effect in the received signal.

37. (Once Amended) The [A] flying object navigation system according to claim 35, [characterized in that] wherein said laser radar air turbulence detector has functions of transmitting laser light, receiving, as a received signal, scattered light caused by scattering of the laser light in the air, and observing the density of air from the intensity of the received signal.

Claims 38-41 have been added.